

REMARKS

Claims 1-27 are pending. By the Office Action, claims 23 and 24 are withdrawn from consideration and claims 1-22 are rejected. By this Amendment, claims 1-24 are amended and claims 25-27 are added. No new matter is added.

The attached Appendix includes marked-up copies of each rewritten claim (37 C.F.R. §1.121(c)(1)(ii)).

Applicants appreciate the courtesies shown to Applicants' representative by Examiner Patterson in the February 25 personal interview. Applicants' separate record of the substance of the interview is incorporated into the following remarks.

I. RESTRICTION REQUIREMENT

Restriction between group I, claims 1-22, and group II, claims 23-24, was required by Examiner Patterson in the July 5, 2002, telephone conference with Applicants' representative. In that telephone conference, Applicants' representative provisionally elected group I, claims 1-22, with traverse. Applicants affirm election of group I, claims 1-22, with traverse.

Claim 1 is directed to a pyrolytic boron nitride double container comprising an outer container and an inner container, wherein the inner container has a transmissivity that is 90% or less of the transmissivity of the outer container. Every feature of claim 1 is included in each of claims 23 and 24. MPEP §821.04 states that "if the elected invention is directed to the product, and the claims directed to the product are subsequently found patentable, process claims which either depend from or otherwise include all of the limitations of the allowable product will be rejoined." (Emphasis in original). Thus, upon allowance of the product claims of group I, method claims 23 and 24 must be rejoined and examined.

Moreover, because method claims 23 and 24 include all of the limitations of claim 1, the subject matter of all of claims 1-24 is sufficiently related that a thorough search for the subject matter of group I (claims 1-22) would encompass a search for the subject matter of group II (claims 23 and 24). Thus, the search and examination of the entire application

(claims 1-24) could be made without serious burden. MPEP §803 states "if the search and examination of an entire application can be made without serious burden, the Examiner must examine it on the merits, even though it includes claims to independent or distinct invention." It is respectfully submitted that this policy should apply in the present application in order to avoid unnecessary delay and expense to Applicants and duplicative examination by the Patent Office.

Thus, withdrawal of the Restriction Requirement is respectfully requested.

II. CLAIMED INVENTION

At paragraph 6, the Office Action indicates that for the purposes of examination, the phrase "double container" is assumed to refer to any container in which the wall has a step-wise change in property from the bottom of the container to the top of the container. Applicants assert that this interpretation is incorrect.

The claimed invention is directed to a pyrolytic boron nitride double container for a source of molecular beams used in molecular beam epitaxy (MBE), comprising an outer container having an outer container transmissivity and an inner container having an inner container transmissivity, wherein the inner container transmissivity is 90% or less of the outer container transmissivity.

At page 1, lines 6-21 of the specification, Applicants disclose that known MBE methods use a pyrolytic boron nitride single container (i.e., having only one container) for containing a material serving as a molecular beam source. At page 2, line 20 to page 3, line 3 of the specification, Applicants disclose further that known MBE methods may also use a pyrolytic boron nitride double container (i.e., having two containers). At page 3, lines 1-3 of the specification, Applicants disclose that a double container has an inner container and an outer container, and may have a space between the inner and outer containers.

Applicants have discovered problems associated with known double containers. For example, at page 3, lines 3-6 of the specification, Applicants disclose that known double containers have poor heat conduction and heat efficiency for heating the inner container.

Applicants have overcome these problems associated with known double containers with the claimed invention, in which the inner container has a transmissivity (with respect to light having a wave number of 2600 cm^{-1} to 6500 cm^{-1}) that is 90% or less of the transmissivity of the outer container. At page 15, lines 2-8 of the specification, Applicants disclose that in embodiments, the claimed inner container transmissivity can be achieved by (1) a roughened outer surface of the inner container, (2) an adapted thickness, area, and/or doping density of the doped layer of the inner container, and (3) an inner container having an increased thickness as compared to a thickness of the outer container. The roughness of the outer surface of the inner container, the thickness/area/doping density of the doped layer, and the thickness of the inner container are structural features of the claimed double container. In addition, the transmissivity of the inner container is also a structural characteristic of the claimed double container.

III. §112 REJECTIONS

Claims 1-22 are rejected under 35 U.S.C. §112, second paragraph, as being indefinite. However, claims 1-22 satisfy the requirements of §112, second paragraph, for at least the reasons discussed below.

A. "Double Container"

Paragraph 6 of the Office Action indicates that the phrase "double container" is indefinite, and its meaning is unclear. However, as agreed to in the personal interview, it would have been clear to one skilled in the art that a double container has two containers -- an inner container and an outer container. Further, a "double container" is clearly defined in the specification in Fig. 1 and at page 12, lines 15-26 of the specification, where Applicants disclose that a double container has an inner container (3) and an outer container (2). For at

least these reasons, and as agreed to in the personal interview, the phrase "double container" is definite and would have been clear to one skilled in the art.

B. Functional Language

Paragraph 7 of the Office Action indicates that the phrases "so that" and "such that" are indefinite for defining desired results rather than specific structural limitations. However, these phrases are not *per se* indefinite. As noted by the court in *In re Swinehart*, 439 F.2d 210, 160 USPQ 226 (CCPA 1971), "a claim may not be rejected solely because of the type of language used to define the subject matter for which protection is sought." See MPEP §2173.01. The standard for determining whether a claim satisfies §112, second paragraph, is whether the scope of the claim is clear to one skilled in the art. The phrases "so that" and "such that" both define structural limitations and render the scope of the claims clear to one skilled in the art.

In addition, functional language (i.e., defining something by what it does rather than by what it is) does not, in and of itself, render a claim improper. *In re Swinehart*.

MPEP §2173.05g states that "there is nothing inherently wrong with defining some part of an invention in functional terms." MPEP §2173.05 (g) requires that a functional limitation must be evaluated and considered, just like any other limitation of the claim, for what it fairly conveys to a person of ordinary skill in the art. In this application, the phrases "so that" and "such that" serve to precisely define structural attributes of interrelated components of the claimed container, and thus satisfy the requirements of §112, second paragraph. See *In re Venezia*, 530 F.2d 956, 189 USPQ 149 (CCPA 1976) and MPEP §2173.05(g).

For example, claim 2 recites the phrase "wherein said outer surface has a roughness such that said inner container transmissivity is 90% or less of said outer container transmissivity." In claim 2, the phrase "such that" defines the interrelationship between the inner container surface roughness (a structural attribute of the claimed double container), and the inner container transmissivity (a structural attribute of the claimed double container).

Similarly, claims 3 and 4 recite the phrase "wherein said doped layer has at least one of a thickness, an area, and a doping density such that said inner container transmissivity is 90% or less of said outer container transmissivity." In claims 3 and 4, the phrase "such that" defines the interrelationship between the thickness, area, and/or doping density of the doped layer (structural attributes of the claimed double container), and the inner container transmissivity (a structural attribute of the claimed double container).

Further, similarly, claims 11 and 12 recite the phrase "wherein an inner container thickness of said inner container is greater than an outer container thickness of said outer container such that said inner container transmissivity is 90% or less of said outer container transmissivity." In claims 11 and 12, the phrase "such that" defines the interrelationship between the inner and outer container thicknesses (structural attributes of the claimed double container), and the inner container transmissivity (a structural attribute of the claimed double container).

For at least these reasons, the phrases "so that" and "such that" are definite and would have been clear to one skilled in the art. For the purpose of uniformity, relevant claims now each recite the phrase "such that."

C. Method Limitations

Paragraph 8 of the Office Action indicates that claim 2 is indefinite for reciting the phrase "is roughened so that the transmissivity of the inner container is 90%." Paragraph 9 of the Office Action indicates that claims 3 and 4 are indefinite for reciting the phrase "while at least one of the thickness, area and doping density of the doped layer is adjusted, so that the transmissivity of the inner container is 90%." Paragraph 10 of the Office Action indicates that claims 5 and 6 are indefinite for reciting the phrase "the doped layer is formed such that the layer is exposed." Paragraph 11 of the Office Action indicates that claims 11 and 12 are indefinite for reciting the phrase "the thickness of the inner layer is increased so that the transmissivity of the inner container is 90%."

By this Amendment, and as agreed to in the personal interview, claims 2-6, 11 and 12 are amended to clarify the claimed structural features. For at least these reasons, and as agreed to in the personal interview, claims 2-6, 11 and 12 are definite and would have been clear to one skilled in the art.

D. Antecedent Basis

Paragraph 12 of the Office Action indicates that claims 15-18 are rejected as being indefinite because there is no antecedent basis for the feature "open portion." By this Amendment, claims 13-18 are amended to address antecedent basis issues. For at least these reasons, and as agreed to in the personal interview, claims 15-18 are definite and would have been clear to one skilled in the art.

E. Conclusion

For at least these reasons, Applicants submit that all of claims 1-22 satisfy the requirements of §112, second paragraph. Reconsideration and withdrawal of the rejection are respectfully requested.

IV. §102 REJECTION

Claims 1-20 are rejected under 35 U.S.C. §102(b) as being anticipated by European Patent No. 0,842,913A1 to Kimura et al. (Kimura). Applicants respectfully traverse the rejection.

Based on the correct interpretation of the claimed invention, as discussed above in Section II, and as agreed to in the personal interview, Kimura clearly does not teach the claimed pyrolytic boron nitride double container. As discussed above, a pyrolytic boron nitride double container has an inner container and an outer container. In stark contrast to the claimed invention, Kimura discloses only a pyrolytic boron nitride single container, having only one container. As discussed above, Applicants disclose a single container as an example of known containers over which the claimed invention is distinguished. At least because Kimura does not teach a double container, Kimura also does not teach an inner container

having a transmissivity that is 90% or less of the transmissivity of an outer container. Thus, as agreed to in the personal interview, Kimura does not teach every feature of claim 1.

For at least these reasons, claim 1 is not anticipated by Kimura. Claims 2-20 depend from claim 1 and thus include all of its limitations. Accordingly, these claims are not anticipated by Kimura for at least the same reasons as claim 1, as well as for their own features. Reconsideration and withdrawal of the rejection are respectfully requested.

V. §103 REJECTION

Claims 21 and 22 are rejected under 35 U.S.C. §103(a) as being unpatentable over Kimura. Applicants respectfully traverse the rejection.

Kimura does not teach or suggest every feature of claim 1, for at least the reasons discussed above. Thus, claim 1 is patentable over Kimura. Claims 21 and 22 ultimately depend from claim 1, and therefore include all of its limitation. Accordingly, claims 21 and 22 are patentable over Kimura for at least the same reasons as claim 1, as well as for their own features.

In particular, claims 21 and 22 require that the gap between the inner container and outer container is between 0.2 mm to 30 mm. As agreed to in the personal interview, Kimura does not teach or suggest a double container having an inner container and an outer container, and therefore Kimura cannot teach or suggest a gap between an inner container and an outer container, much less a specific gap distance. Thus, the Office Action has not established a *prima facie* case of obviousness for claims 21 and 22 over Kimura.

Even if a *prima facie* case of obviousness had been established -- which it has not -- the claimed gap range would not have been obvious to one skilled in the art and would not have been determined by routine optimization. Applicants disclose the criticality of the claimed range at page 9, line 23 to page 10, line 14. Specifically, Applicants disclose unexpected results obtained with a gap that is 0.2 mm to 30 mm. In addition, Applicants disclose problems associated with a gap that is less than 0.2 mm and a gap that is more than

30 mm. As agreed to in the interview, such a showing of the criticality of the claimed range, which is not disclosed in Kimura, would be sufficient to overcome a *prima facie* case of obviousness, had one been established -- which it has not.

For at least these reasons, Applicants submit that claims 21 and 22 would not have been obvious to one skilled in the art. Thus, claims 21 and 22 are patentable over Kimura. Reconsideration and withdrawal of the rejection are respectfully requested.

VI. NEW CLAIMS AND CLAIM AMENDMENTS

Support for new claim 25 can be found at least at page 4, lines 1-9 of the specification. Support for claims 26 and 27 can be found at least at page 7, lines 3-9 of the specification. Support for claims 28-31 can be found at least in Table I of the specification.

Support for the claim amendments can be found at least in the original claims. In addition, further support can be found for claims 5 and 6 at page 16, line 16 to page 17, line 7 of the specification. Further support for claims 11 and 12 can be found at page 17, line 25 to page 18, line 7. Further support for claims 13-18 can be found at page 15, lines 22-27, page 17, lines 18-24 and Fig. 1.

VII. CONCLUSION

In view of the foregoing amendments and remarks, Applicants submit that this application is in condition for allowance. Favorable reconsideration and prompt allowance of the claims are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in better condition for allowance, the Examiner is invited to contact Applicants' undersigned representative at the telephone number set forth below.

Respectfully submitted,

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Attachment:

Petition for Extension of Time
Appendix

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DEPOSIT ACCOUNT USE
AUTHORIZATION
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